

506 Ready-Mix Concrete Quality Management Plan

506.1 Introduction

506.1.1 The purpose of the Ready-Mix Concrete Quality Management Plan is to establish the procedures for becoming pre-qualified as a supplier of ready-mix concrete. The Management Plan is to assure the Utah Department of Transportation that permanent and portable ready-mix concrete batch plants are capable of producing a quality ready-mix concrete product. Only approved suppliers will be accepted and certified for UDOT projects.

506.2 Pre-qualifications for Ready-Mix Suppliers

506.2.1 Applicants shall submit to the Quality Assurance (QA) Engineer, a letter requesting that they be designated as a pre-qualified supplier. The letter shall include the following:

506.2.1.1 Proof that the batch plant producing ready-mix concrete is currently certified as a pre-qualified supplier by the QA Section as outlined in section 506.3 of this document.

506.2.1.2 Name and phone number of the Quality Control Manager(QCM) at each supplier who may be contacted for scheduling of inspections and general information.

506.2.1.3 Signature of a representative having legal authority to bind the company.

506.2.2 The Ready-Mix Supplier agrees to:

506.2.2.1 Submit proof that each batch plant is certified in conformance with the requirements of National Ready Mixed Concrete Association (NRMCA) batch plant certification program.

506.2.2.2 Meet or exceed UDOT's Standard Specifications, including all applicable ASTM and AASHTO specifications.

506.2.2.3 Make available to the QA Engineer, or representative, all records required by section 506.3 of this document when requested.

506.2.2.4 Submit to a minimum of one QA section batch plant inspection per year in order to maintain certification as a pre-qualified supplier.

506.2.2.5 Submit to a minimum of one Region Independent Assurance(IA) batch plant inspection per year.

506.2.3 Notification of acceptance as a Ready-Mix Concrete supplier will be made in writing by the QA Engineer.

506.2.4 Send all documentation and correspondence to the address listed below.

**Quality Assurance Section
4501 South 2700 West
Salt Lake City, Utah 84119
Phone Number: 1-801-965-4560
Fax: 1-801-965-3843**

506.3 Quality Assurance Section Plant Inspection Program

506.3.1 Acceptance as a Pre-qualified Supplier:

506.3.1.1 Description: A pre-qualified supplier will adhere to the guidelines set forth in section 506.3 of this document. Suppliers will pass a QA Section inspection, as stated in section 506.3.3, prior to acceptance as a pre-qualified batch plant. Each pre-qualified plant will be subject to a minimum of one QA Section and

one Region IA plant inspection per year. Portable batch plants must be pre-qualified each time they are moved. Failure to meet one or more of the requirements listed in section 506.3.3 may result in an accelerated inspection program facilitated by the Region IA inspection team. Any additional failures to meet these minimum requirements will result in the suspension of the plant as a pre-qualified supplier until all documented deficiencies are corrected. The supplier may be reinstated, as a qualified supplier, after a mandatory QA section review of the supplier's QC program.

506.3.2 Batch Plant Quality Control Policies and Procedures:

- 506.3.2.1 Description: Provide adequate training to familiarize all QC personnel with the company's QC procedures and supply each Quality Inspector(QI) with a copy of the company QC Policy Statement, and QC Manual which includes, at a minimum, the plant certification technical criteria set forth in this document. Have a designated QI (see section 506.3.3.1.b) present on every work shift. These individuals must be properly trained and thoroughly familiar with all required QC procedures. In addition, the QI shall have the authority to fully enforce the procedures.
- 506.3.2.2 *Commentary:* The ultimate success in achieving a quality product is heavily dependent upon the company's and employee's commitment and the employee's understanding of the company's QC procedures. In order to successfully implement and enforce compliance with the company's QC policies, a QI should report to an individual with the authority and knowledge to oversee plant operations.

506.3.3 Batch Plant Requirements:

506.3.3.1 QC Procedures:

- a) Develop, periodically review and update as necessary, a company QC policy statement and manual. The QC Manual must be approved by the QA engineer prior to acceptance as a pre-qualified supplier. The QC Manual shall contain, at a minimum, all requirements listed in the NRMCA's "Ready Mixed Concrete Quality Control Guide."
- b) Designate a QI for every work shift. The QI must be WAQTC Concrete Field Technician certified and have a minimum of six (6) months experience working in a ready-mix concrete batch plant. A prospective QI who does not have the required qualifying experience may work as a Quality Inspector in training (QIT) with the written approval of the QA Engineer. The QIT must then work under the direct supervision of a qualified QI or QCM for a six (6) month probationary period. The QI must be present while the batch plant is producing concrete for UDOT projects.
- c) Provide necessary training to designated QI and plant personnel. QI shall have ready access to the latest company QC Manual.
- d) Conduct meetings with the QCM and designated QI's, a minimum of once every three months to review the company's QC procedures, discuss possible changes and implement any procedural changes.
- e) The QCM or designated representative shall review and evaluate the QC techniques of all QI's once every six months to assure compliance with QA Section guidelines and certification procedures.
- f) Submit to a minimum of one plant inspection, each year, by a QA Section Inspector.
- g) Address and document each deficiency noted in the QA Section inspection reports (see section 506.3.5) and conduct monthly follow-up meetings for a period of three (3) months to assure compliance.

506.3.3.2 Required QC Records:

- a) Supplier will conduct QC testing at a frequency consistent with NRMCA QC guidelines. Supplier shall maintain records of all QC testing. QC tests may include, but are not limited to: gradation of aggregates, moisture content of aggregates, concrete yield, concrete water/cement ratio, concrete air content, concrete slump, concrete temperature, concrete compressive strength.
- b) Approved mix designs, trial batch test results and aggregate source certification, updated yearly. Aggregate source certification shall be consistent with ASTM C 33 Standard Specification for Concrete Aggregates. Aggregate source certification shall also include an evaluation of aggregate reactivity in accordance with existing ASTM Standards. (Note: ASTM C 289 shall not be considered a sufficient evaluation of aggregate reactivity.)
- c) Manufacturer's Certificate of Compliance for all admixtures.
- d) QCM and QI's current WAQTC certification documents, experience verification documents and QC training records.
- e) Maintain a written "new employee" training and/or orientation policy in the company files.
- f) Keep copies of the plant's QC Policy Statement and QC Manual on file.
- g) Proof of current NRMCA certification or certification through a UDOT qualified independent laboratory following NRMCA certification policy procedures.
- h) Complete inspection checklist, signed by the QI, for each work shift.
- i) Minutes of meetings held between the QCM and QC personnel.
- j) QCM's evaluation of the QI performance.
- k) Comprehensive report signed by the QCM, that details the plants response and follow-up to each specified deficiency documented during a QA Section Inspection (see section 506.3.5).

506.3.3.3 Responsible Person(s): QCM.

506.3.4 Equipment Certification Requirements:

506.3.4.1 QC Requirements:

- a) Maintain certification of beams, scales, water meters, moisture probes and admixture dispensers as per UDOT Standard Specifications.
- b) Maintain certification of air meters, unit weight buckets, slump cones, plastic concrete cylinder molds & rods, thermometers and miscellaneous equipment as per ASTM and AASHTO Specifications.
- c) Any broken or malfunctioning equipment must be removed from service immediately and replaced with new or repaired/recertified equipment.
- d) Use only UDOT qualified laboratories for concrete compressive strength tests.
- e) QCM shall conduct yearly inspection of all ready-mix trucks in accordance with NRMCA guidelines and maintain a file of current ready-mix truck certification documents.

506.3.4.2 Required Records:

- a) Notation on inspection checklist documenting which test equipment was used on each shift and their corresponding certification dates.
- b) Maintain file of all equipment certifications listed in section 506.3.4.1.

506.3.4.3 Production Delivery Requirements: Each truck load of ready-mix concrete delivered to a state project shall be accompanied by the following information:

- a) Target water/cement ratio (w/c).
- b) Quantity of cementitious material used (lb).
- c) Target quantity of water based on w/c (lb or gal).
- d) Quantity of water actually used (lb or gal),
- e) Weights of coarse and fine aggregates (lb).
- f) Moisture content (as batched) of coarse and fine aggregates (%).
- g) Time the load was batched.

506.3.4.4 Responsible Person: QCM.

506.3.5 QA Section Inspector Guidelines:

506.3.5.1 Pre-qualification Inspection: The QA Section inspector will make a plant inspection visit at the request of the supplier. At that time the inspector will check the plant in accordance with the requirements of this document. Upon completion of the inspection the QA Engineer will recommend one of the following:

506.3.5.2 a) **Certification** as a pre-qualified Ready-Mix concrete plant.

b) **Non-Compliance** as a pre-qualified plant. The QA inspector will submit a written report to the supplier outlining all deficiencies observed during the plant inspection process. The supplier is required to address all deficiencies noted in the QA inspectors report, at which time the supplier may request another pre-qualification inspection.

506.3.5.3 Yearly Maintenance of Pre-qualification Status: The QA Section inspector will make a minimum of one plant inspection visit per year. At that time the inspector will check the plant in accordance with the requirements of this document. In addition, the QA Section inspector will periodically review UDOT materials sampling and testing records for compliance with UDOT Standard Specifications. Upon completion of the inspection and records review the QA Engineer will recommend one of the following:

a) **Certification** as a pre-qualified Ready-Mix Concrete plant.

b) **Non-Compliance** as a pre-qualified supplier. Violations documented during the yearly maintenance inspection program may result in suspension or revocation of the supplier's pre-qualified status. The QA inspector will submit a written report to the supplier outlining all deficiencies observed during the plant inspection process. The supplier is required to address all deficiencies noted in the QA inspectors report, at which time the supplier may request another plant inspection. The supplier will be reinstated as a pre-qualified supplier upon receiving a favorable rating by the QA Section Inspector.

506.3.5.4 QA Section Inspector Check List:

- Verify current NRMCA batch plant certification.
- Verify aggregate source certification.
- Examine the plants QC Policy Statement and Manual.
- C Review the distribution of said statement and manual and its availability to employees.
- C Review QC training records.
- C Review the plant records to confirm that a QI has been assigned to each work shift and has signed the inspection checklist.
- C Interview the person(s) responsible for QC policies and procedures.
- C Verify the QI lines of authority.
- C Examine the plant's equipment certification records.
- C Examine the plant's agitating ready-mix truck inspection records.
- C Inspect testing equipment for damage and ensure all equipment is in good repair.
- C Verify UDOT qualification of plant or contract laboratory.
- C Verify production QC testing records are being maintained.

506.3.5.4 Responsible Person: QA Section Inspector.

506.3.6 Region IA Inspector Guidelines:

506.3.6.1 Independent Assurance Inspections: The Region IA inspector will make a minimum of one, random batch plant inspection visit each year. However, batch plant operators can expect to have numerous IA inspections throughout each construction season. Upon completion of the IA inspection the inspector will report the findings to the Region Materials Engineer, who will recommend one of the following:

- a) Compliance
- b) Non-Compliance Warning
- c) Non-Compliance resulting in shut down and placement on the **Accelerated Plant Inspection Program**. Failure to consistently meet UDOT standard specifications or any of the requirements listed in section 506.3.3 may result in an accelerated inspection program. Any violations found during an IA inspection must be addressed immediately. The supplier must submit a letter to the Region Materials Engineer outlining the corrective action taken for each violation within 30 days of the IA inspection. Failure to do so will require the Region Materials Engineer to report the violations to the QA Engineer and may result in the revocation of the suppliers pre-qualified status.

Accelerated Inspection Program: The accelerated inspection program will be carried out for one year at a minimum frequency of one inspection visit per month during production.

- d) Non-Compliance while on the Accelerated Inspection Program: Failure to meet UDOT standard specifications or the requirements of this plan while on an Accelerated Inspection Program will result in the suspension of the plant as a pre-qualified supplier until all documented deficiencies are corrected and the supplier has undergone a mandatory QA section review of the requirements of this plan and the supplier's own QC program. The supplier may be reinstated as a qualified supplier at that time.

506.3.6.2 Region IA Inspector Check List: Follow the requirements and check list set forth in the NRMCA "Plant Certification Check List - Section 3".

506.3.6.3 Responsible Person: Region Materials IA Inspector.

506.3.7 Dispute Resolution: Suppliers wishing to appeal a suspension from the pre-qualified supplier list may file a formal complaint with the QA Engineer. The appeal will be heard by a three person panel consisting of industry, UDOT materials or construction representative and an outside arbitrator acceptable to all parties. The independent panel will be named by the QA Engineer in cooperation with industry representatives. The panels decision is final.